We Claim:

1. A coaxial RF or microwave component that guides or controls radiation, comprising:

a. at least one RF or microwave radiation entry port in a conductive structure;

b. at least one RF or microwave radiation exit port in the conductive structure;

c. at least one passage substantially bounded on the sides by the conductive structure through which RF or microwave radiation passes when traveling from the at least one entry port to the at least one exit port;

d. a central conductor extending along a length of the at least one passage from the entry port to the exit port; and

wherein the conductive structure includes one or more apertures which extend from the passage to an outer region, wherein the apertures have dimensions that are no larger than the greater of 1/10 of the wavelength or 200 microns and which are not intended to pass significant RF radiation.

2. The component of claim 1 wherein at least some of the apertures are used to remove a sacrificial material.

3. The component of claim 1 wherein at least some of the apertures are used to receive a dielectric that aids in retaining a desired relative position between the central conductor and the conductive structure.

4. The component of claim 1 wherein the conductive structure and the central conductor are monolithic.

5. The component of claim 1 wherein at least a portion of the central conductor or the conductive structure comprises material formed from a plurality of successively deposited layers.

6. The component of claim 1 wherein at least a portion of the central conductor or the conductive structure comprises material formed by a plurality of electrodeposition operations.

7. The component of claim 1 wherein a cross-sectional dimension of the passage perpendicular to a propagation direction of the radiation along the passage is less than about 1 mm.

8. The component of claim 8 wherein a cross-sectional dimension of the passage perpendicular to a propagation direction of the radiation along the passage is less than about 0.5 mm.

9. The component of claim 8 wherein a cross-sectional dimension of the passage perpendicular to a propagation direction of the radiation along the passage is less than about 0.2 mm.

10. The component of claim 1 wherein at least a portion of the passage has a generally rectangular shape.

11. The component of claim 1 wherein at least a portion of the central conductor has a generally rectangular shape.

12. The component of claim 1 wherein the passage extends along a three-dimensional path.

13. The component of claim 12 wherein the three-dimensional path comprises a three-dimensional spiral.

14. The component of claim 1 wherein the component comprises a hybrid coupler.

15. The component of claim 1 wherein the component comprises a delay line.

16. The component of claim 1 wherein the component comprises an antenna.

17. The component of claim 16 wherein the antenna comprises an antenna array.

18. The component of claim 16 wherein the antenna is fed by or feeds a Butler matrix.

19. The component of claim 16wherein the antenna array comprises a patch antenna array.

20. The component of claim 16 wherein the antenna array is fed by signals propagated through a Butler matrix and wherein each input to the Butler matrix is controlled by a power amplifier.

21. The component of claim 1 wherein at least one coaxial line is arranged in a serpentine form.

22. The component of claim 21 wherein the at least one serpentine form comprises a single shared conductive shielding structure located between at least two different portions of the conductive structure.

23. The component of claim 1 wherein the two passages are located adjacent one another wherein the two passages are separated by a single conductive shielding structure.

24. The component of claim 1 at least in part formed using one or more of the following operations:

a. selectively electrodepositing a first conductive material and electrodepositing a second conductive material, wherein one of the first or second conductive materials is a sacrificial material and the other is a structural material;

b. electrodepositing a first conductive material, selectively etching the first structural material to create at least one void, and electrodepositing a second conductive material to fill the at least one void;

c. electrodepositing at least one conductive material, depositing at least one flowable dielectric material, and depositing a seed layer of conductive material in preparation for formation of a next layer of electrodeposited material, or

d. selectively electrodepositing a first conductive material, then electrodepositing a second conductive material, then selectively etching one of the first or second conductive materials, and then electrodepositing a third conductive material, wherein at least one of the first, second, or third conductive materials is a sacrificial material and at least one of the remaining two conductive materials is a structural material.

25. The component of claim 1 at least in part formed using one or more of the following operations:

a. separating at least one sacrificial material from at least one structural material;

b. separating a first sacrificial material from (a) a second sacrificial material and (b) at least one structural material to create a void, then filling at least a portion of the void with a dielectric material, and thereafter separating the second sacrificial material from the structural material and from the dielectric material; or

c. filling a void in a structural material with a magnetic or conductive material embedded in a flowable dielectric material and thereafter solidifying the dielectric material.

26. The component claim 1, a wherein the component comprises one or more of a low pass filter, a high pass filter, a band pass filter, a reflection base filter, an absorption based filter, a leaky wall filter, a delay line, an impedance matching structure for connecting other functional components, an antennae, a feedhorn, a directional coupler, or a combiner (e.g. a quadrature hybrid, a hybrid ring, a Wilkinson combiner, a magic T).

27. The component of claim 1, wherein the component comprises one or more of a microminiature coaxial component, a transmission line, a low pass filter, a high pass filter, a band pass filter, a reflection-based filter, an absorption-based filter, a leaky wall filter, a delay line, an impedance matching structure for connecting other functional components, a directional coupler, a power combiner (e.g., Wilkinson) , a power splitter, a hybrid combiner, a magic TEE, a frequency multiplexer, or a frequency demultiplexer, a pyramidal (smooth wall) feedhorn antenna, and/or a scalar (corrugated wall) feedhorn antenna.

28. A method of manufacturing a microdevice, comprising:

a. depositing a plurality of adhered layers of material, wherein the deposition of each layer of material comprises,

i. deposition of at least a first material;

ii. deposition of at least a second material; and

b. removing of at least a portion of the first or second material after deposition of the plurality of layers;

wherein a structure resulting from the deposition and the removal provides at least one structure that can function as an RF or microwave control, guidance, transmission, or reception component, and comprises

a. at least one RF or microwave radiation entry port in a conductive structure;

b. at least one RF or microwave radiation exit port in the conductive structure;

c. at least one passage substantially bounded on the sides by the conductive structure through which RF or microwave radiation passes when traveling from the at least one entry port to the at least one exit port;

d. a central conductor extending along a length of the at least one passage from the entry port to the exit port; and

wherein the conductive structure includes one or more apertures which extend from the passage to an outer region, wherein the apertures have dimensions that are no larger than the greater of 1/10 of the wavelength or 200 microns and which are not intended to pass significant RF radiation.

29. A four port hybrid coupler comprising a plurality of adhered layers of material comprising four microminiature coaxial elements, a first of the four coaxial element extending between two of four ports, and a second of the coaxial elements extending between the other two of the four ports, while the remaining two coaxial elements extend between the first and second coaxial elements, wherein at least a portion of the length of least one of the coaxial elements is arranged in a serpentine form.

30. The four port hybrid coupler claimed in claim 29, wherein the serpentine form comprises a single shared shield structure between at least portions of adjacent central conductor segments of one or more coaxial elements.

31. A method of manufacturing a circuit for supplying signals to a passive array of N antenna elements to produce a plurality of beams, comprising:

a. depositing a plurality of adhered layers of material to form (N/2) log2N four port hybrid couplers each comprising four microminiature coaxial elements, each coaxial element extending between a respective pair of ports of the hybrid coupler such that a pair of coaxial elements is coupled to each port; and

b. connecting at least some of the hybrid couplers to other hybrid couplers via phase shifting components to form a Butler matrix.

32. The method of claim 31, wherein the deposition of each layer of material comprises:

a. selective deposition of at least a first material;

b. deposition of at least a second material;

c. planarization of at least a portion of the deposited material,

wherein a plurality of layers are deposited, and

wherein at least a portion of the first or second material is removed after deposition of the plurality of layers.

33. A Butler matrix for supplying signals to a passive array of N antenna elements to produce a plurality of beams, comprising (N/2) log2N four port hybrid couplers wherein each of the four hybrid couples comprise four microminiature coaxial elements, a first of the four coaxial elements extending between two of four ports, and a second of the coaxial elements extending between the other two of the four ports, while the remaining two coaxial elements extend between the first and second coaxial elements, wherein at least a portion of the length of least one of the coaxial elements is arranged in a serpentine form.

34. The Butler matrix of claim 34, wherein the serpentine form comprises a single shared shield structure between at least portions of adjacent central conductor segments of one or more coaxial elements.